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10 lead, bismuth, thorium, gallium, tin, antimony, germanium, arsenic, cadmium, mercury, and combinations of two or more thereof; and said support is selected from the group consisting of silica, alumina, spinel, and combinations of two or more thereof.

37. A process according to claim 36 wherein said composition further comprises silver.

38. A process according to claim 35 wherein said composition further comprises an alkali metal or an alkali metal-containing compound.

39. A process according to claim 38 wherein said composition further comprises silver.

40. A process according to claim 38 wherein said alkali metal-containing compound is an alkali metal halide.

41. A process according to claim 39 wherein said alkali metal-containing compound is an alkali metal halide.

42. A process according to claim 36 wherein the metal of said spinel is selected from the group consisting of zinc, magnesium, calcium, beryllium, strontium, barium, radium, iron, manganese, zirconium, molybdenum, ruthenium, rhodium, cobalt, germanium, tin, and combinations of two or more thereof.

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43. A process according to claim 36 wherein said selectivity enhancer is lead.

44. A process according to claim 41 wherein said selectivity enhancer is lead.

45. A process according to claim 36 wherein said selectivity enhancer is bismuth.

46. A process according to claim 41 wherein said selectivity enhancer is bismuth.

47. A process according to claim 36 wherein said selectivity enhancer is gallium.

48. A process according to claim 41 wherein said selectivity enhancer is gallium.

49. A process according to claim 36 wherein the weight % of said palladium in said composition is in the range of from 0.001 to 1.5%

50. A process according to claim 36 wherein the weight % of said selectivity enhancer in said composition is in the range of from 0.003 to 5%.

51. A process according to claim <sup>36</sup>~~41~~ wherein the weight % of said selectivity enhancer in said composition is in the range of from about 0.001 to about 10%.

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52. A process comprising contacting a fluid with a composition

wherein

said fluid comprises an olefin and a highly unsaturated

hydrocarbon;

said composition comprises palladium, a selectivity enhancer and  
an inorganic support;

said selectivity enhancer is selected from the group consisting of  
lead, bismuth, thorium, gallium, tin, antimony, germanium, arsenic, cadmium,  
mercury, and combinations of two or more thereof;

said support is selected from the group consisting of silica,  
alumina, spinel, and combinations of any two or more thereof wherein the metal  
of said spinel is selected from the group consisting of zinc, magnesium, calcium,  
beryllium, strontium, barium, radium, iron, manganese, zirconium, molybdenum,  
ruthenium, rhodium, cobalt, germanium, tin, and combinations of any two or  
more thereof;

the weight % of said palladium in said composition is in the range  
of from about 0.0001 to about 5%; and

the weight ratio of said selectivity enhancer to said palladium is in  
the range of from about 0.1:1 to about 20:1.

A2 ext.

53. A process according to claim 52 wherein said support is alumina; the weight % of said palladium in said composition is in the range of from about 0.001 to about 1.5%; and the weight ratio of said selectivity enhancer to said palladium is in the range of from about 1:1 to about 10:1.

54. A process according to claim 53 wherein said palladium is present as skin distributed on the surface of said alumina and the thickness of said skin is in the range of from 10 to about 300  $\mu\text{m}$ .

55. A process according to claim 52 wherein said composition further comprises an alkali metal fluoride.

56. A process according to claim 52 wherein said composition further comprises silver.

57. A process according to claim 55 wherein said composition further comprises silver.

58. A process comprising contacting an olefin-containing fluid stream which comprises a highly unsaturated hydrocarbon, in the presence of hydrogen, with a composition under a condition sufficient to effect selective hydrogenation of said highly unsaturated hydrocarbon to a less unsaturated hydrocarbon wherein

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said composition comprises palladium, a selectivity enhancer and alumina wherein said selectivity enhancer is selected from the group consisting of bismuth, lead, gallium; and

said palladium and said selectivity enhancer are each present in a  
5 sufficient amount to effect selective hydrogenation of said highly unsaturated hydrocarbon to a less unsaturated hydrocarbon.

59. A process according to claim 58 wherein said composition further comprises an alkali metal halide.

60. A process according to claim 58 wherein said composition further comprises silver.

61. A process according to claim 59 wherein said composition further comprises silver.

62. A process according to claim 58 wherein said hydrogen is present in said highly unsaturated hydrocarbon.

63. A process according to claim 58 wherein said hydrogen is fed separately and mixed with said highly unsaturated hydrocarbon prior to said contacting with said composition.

64. A process according to claim 58 wherein said selectivity enhancer is bismuth.

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65. A process according to claim 58 wherein the selectivity enhancer is gallium.
66. A process according to claim 58 wherein the selectivity enhancer is lead.
67. A process according to claim 58 wherein said palladium is present as skin distributed on the surface of said alumina and the thickness of said skin is in the range of from 10 to about 300  $\mu\text{m}$ .

Respectfully submitted

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I hereby certify that this request is being deposited with the  
United States Patent and Trademark Office,  
Washington, D.C. 20231, on

November 19, 1998

(Date)

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